To The Delta Vision Blue Ribbon Task Force:

As a follow up to my September 19, 2007 email to the Task Force, Subject: *"Spragg Waterbag Technology",* I thought I should send you copies of documents from Southern California water agencies written in support of investigating waterbag emergency applications in the Delta.

The following documents are attached:

1. A letter from the Metropolitan Water District of Southern California dated December 18, 2006.

2. A Resolution passed by the West Basin MWD Board of Directors in support of investigating waterbag emergency applications in the Delta, and related documents.

3. A Resolution passed by the Water Replenishment District of Southern California in support of investigating waterbag emergency applications in the Delta, and related documents.

I hope these documents are of help in responding to my request that,

"...the Delta Task Force include a recommendation in its November report that waterbag technology applications be tested in a lab and if successful, be tested in the Delta."

I look forward to hearing your response.

Best regards,

Terry G. Spragg

MWD
METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

Executive Office

December 18, 2006

Mr. Terry Spragg
Terry G. Spragg and Associates
420 Highland Avenue
Manhattan Beach, CA 90266

Dear Mr. Spragg:

I am responding to your verbal request of December 11, 2006 for clarification of The Metropolitan Water District of Southern California's position on waterbag technology as a means for developing additional water supply for our region.

Metropolitan does not have an existing program that would utilize waterbag transport for additional supply. Furthermore, we are not in the position to advocate any specific waterbag technology, similar to our neutral position regarding advocacy of any specific desalination technology.

If our member agencies wish to pursue waterbag technology, Metropolitan is willing to serve as a regional facilitator, which is the current role we have adopted for development of seawater desalination projects. It may be appropriate to discuss with member agencies how this approach might be of interest and potential benefit to Metropolitan.

It is possible that waterbag technology may provide a cost-effective means to develop additional water supplies for certain member agencies. This approach could be analyzed for applicability to our Integrated Water Resources Plan (IRP) if member agencies feel that this approach should be further explored. Metropolitan believes that waterbag technology should be judged on the merits of its economic, environmental, and technological benefits compared to other IRP elements including Local Resources Program proposals.

We understand that one of your goals is to demonstrate the application of waterbag technology in California. To that end, we are willing to work with any member agency that partners with you and requests Metropolitan's advice and assistance in your demonstration voyage efforts.

We welcome the opportunity to work with any of our member agencies that may be interested in pursuing research, demonstration, and implementation of waterbag technology and storage applications that provide regional benefits of increased water supply reliability.

Very truly yours,

Stephen N. Arakawa
Manager, Water Resource Management

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WEST BASIN MUNICIPAL WATER DISTRICT **FEBRUARY 16, 2006 -**
Water Resources

Little, Dear
FEBRUARY 27, 2006 -

Board Meeting

Prepared by: Fernando

Paludi

Submitted by: Paul E.

Shoenberger Approved by: Rich Nagel

ACTION CALENDAR

WATERBAG TECHNOLOGY AS EMERGENCY DELTA WATER SUPPLY

SUMMARY:

The recent devastation in New Orleans (Exhibit "A") caused by Hurricanes Katrina and Rita has raised public awareness in California of an issue already known to state water officials: the susceptibility of the Bay-Delta levee system to widespread failure as a result of natural events, such as a major earthquake, severe storm, and rising ocean-water levels, or a combination of these. The maze-like arrangement of channels, levees, and islands function as a sort of natural plumbing system to convey water through the Delta to supply ecosystems, farms, and cities.

Strengthening the levees and protecting the water supply have become policy and funding priorities for Governor Schwarzenegger and key legislators. AB1200 (Laird) directly addresses the current risks and directs the Department of Water Resources and the Department of Fish and Game to evaluate and rate options for preventing the disruption of water supplies from the Delta and the Governor's $222 billion bond proposal includes substantial funding earmarked for levee repair. Yet, there is currently no clear answer to the question of how the continuity of drinking water supply will be maintained in the event of disaster such as is being contemplated.

One concept promoted by Terry G. Spragg and Associates is the use of waterbag technology (Exhibit "B") to transport fresh water from the Sacramento area, through the Delta to a location proximal to the State Water Project pumps in the south Delta. This is an emergency response application of a technology that Mr. Spragg has long advocated to the water community here in California, along the West Coast, and the Middle East. In California, the use of waterbags as a viable alternative to traditional conveyance systems for water transfers still faces challenging questions, such as economics and feasibility testing.

There is no traditional alternative; however, transporting fresh water through the Delta in the event of catastrophic failure of the Delta levee system where the state and federal system pumps would be rendered useless for an extended period of time is a proposed alternative. If the state agencies are being tasked

by the Legislature to evaluate options for maintaining water supply as mentioned above, it would seem that Mr. Spragg's waterbag technology may merit consideration in that context.

The Water Replenishment District adopted a resolution at their December 21, 2005 meeting, encouraging and supporting the use of waterbag technology to improve water reliability.

FISCAL IMPACTS:

Not applicable.

ENVIRONMENTAL COMPLIANCE:

Not applicable.

COMMITTEE STATUS:

This item was reviewed by the Water Resources Committee on February 16, 2006 and was recommended for approval at the February 27, 2006 Board meeting.

RECOMMENDED MOTION:

That the Board approves, adopts, and authorizes the President to sign Resolution No. 2-06-837, "A RESOLUTION OF THE BOARD OF DIRECTORS OF WEST BASIN MUNICIPAL WATER DISTRICT ENCOURAGING THE CONSIDERATION OF WATERBAG TECHNOLOGY."

LIST OF EXHIBITS:

Exhibit "A" - New Orleans Levee Break
Exhibit "B" - WaterBag Technology
Exhibit "C" - Resolution No. 2-06-837

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RESOLUTION NO. 2-06-837

A RESOLUTION OF THE BOARD OF DIRECTORS OF WEST BASIN MUNICIPAL WATER DISTRICT ENCOURAGING THE CONSIDERATION OF WATERBAG TECHNOLOGY

WHEREAS, the West Basin Municipal Water District is responsible for ensuring an adequate, safe, and reliable supplemental supply of high-quality water to its member agencies, communities, business, and residents; and,

WHEREAS, West Basin seeks innovative ways to conserve water through its water recycling, conservation, and ocean-water desalination programs; and

WHEREAS, the population and corresponding demand for in Southern California are expected to increase by 50% over the next 20 years; and

WHEREAS, Southern California's demand for alternative water supplies and technologies increase each year; and

WHEREAS, Southern California's reliance on the delivery of imported water from the Sacramento-San Joaquin Delta could be disrupted by a major earthquake causing catastrophic levee failure; and

WHEREAS, waterbag technology has been proposed as a temporary levee repair tool and a temporary conveyance tool for transporting water through the Delta; and

WHEREAS, AB 1200 requires the Department of Water Resources to evaluate impacts on water supplies from the Delta, should a catastrophic event occur and determine options to prevent disruption of the water supply; and

WHEREAS, a successful demonstration of waterbag technology could advance water transportation technology in California and would be beneficial to the people in both Northern and Southern California

NOW, THEREFORE, BE IT RESOLVED, that the Board of Directors of the West Basin Municipal Water District declares as follows:

1. West Basin encourages Metropolitan Water District of Southern California, its Member Agencies, the Department of Water Resources, and all appropriate State agencies to investigate the utilization of waterbag technology as a tool to repair levee breaks and for the temporary conveyance of water through the Delta;
2. West Basin will transmit a copy of this resolution to the California Department of Water Resources and other appropriate state agencies as a request to support and test the waterbag technology.

PASSED, APPROVED AND ADOPTED on _____, 2006.

_____

__

President

ATTEST:

_____
Secretary
(SEAL)

G:\directors\resos\ wb837

February 28, 2006

Mr. Wes Bannister, Chairman
Metropolitan Water District of Southern California
Attention Jeff Kightlinger, CEO/General Manager
P.O. Box 54153
Los Angeles, CA 90054

Dear Chairman Bannister:

On behalf of the West Basin Municipal Water District Board of Directors, I am writing this letter to encourage the Metropolitan Water District of Southern California (MWD) to investigate and support testing of waterbag technology as a tool to repair levee breaks and as a temporary conveyance of water through the Delta.

A concept promoted by Terry G. Spragg and Associates is the use of waterbag technology to transport fresh water from the Sacramento area, through the Delta to a location proximal to the State Water Project pumps in the south Delta. This is an emergency response application of a technology that Mr. Spragg has long advocated to the water community here in California, along the West Coast, and the Middle East. In California, the use of waterbags as a viable alternative to traditional conveyance systems for water transfers still faces challenging questions, such as feasibility testing and economics.

As you are aware, the recent devastation in New Orleans caused by Hurricane Katrina has raised public awareness in California of an issue already known to state water officials: the susceptibility of the Bay-Delta levee system to widespread failure as a result of natural events, such as a major earthquake, severe storm, and rising ocean-water levels, or a combination of these. The maze-like arrangement of channels, levees, and islands function as a sort of natural plumbing system to convey water through the Delta to supply ecosystems, farms, and cities. Strengthening the levees and protecting the water supply have become policy and funding priorities for Governor Schwarzenegger and key legislators.

Assembly Bill 1200 (Laird) directly addresses the current risks and directs DWR and the Department of Fish and Game to evaluate and rate options/technologies for preventing the disruption of water supplies from the Delta, and the Governor's $222 billion bond proposal includes substantial funding earmarked for levee repair. Yet, there is no clear answer to the question of how the continuity of drinking water supply will be maintained through the Delta in the event of disaster.

If the state agencies are being tasked by the Legislature to evaluate options for maintaining water supply as mentioned above, it would seem that Mr. Spragg's waterbag technology may merit consideration in that context.

On February 27, 2006, the West Basin Board adopted a resolution encouraging MWD and all appropriate state agencies to investigate the utilization of waterbag technology as a tool to repair levee breaks and for the temporary conveyance of water through the Delta. I have enclosed a copy of the resolution as a formal request to MWD to support and test the waterbag technology to that end.

West Basin thanks you in advance for consideration of this technology. If you have any questions, please contact Rich Nagel at (310) 660-6210.

Sincerely,

William A. Baker
President

February 28, 2006

Mr. Lester Snow, Director
Department of Water Resources
P.O. Box 942836
Sacramento, CA 94236-0001

Dear Director Snow:

On behalf of the West Basin Municipal Water District Board of Directors, I am writing this letter to encourage the Department of Water Resources (DWR) to investigate and support testing of waterbag technology as a tool to repair levee breaks and as a temporary conveyance of water through the Delta.

A concept promoted by Terry G. Spragg and Associates is the use of waterbag technology to transport fresh water from the Sacramento area, through the Delta to a location proximal to the State Water Project pumps in the south Delta. This is an emergency response application of a technology that Mr. Spragg has long advocated to the water community here in California, along the West Coast, and the Middle East. In California, the use of waterbags as a viable alternative to traditional conveyance systems for water transfers still faces challenging questions, such as feasibility testing and economics.

As you are aware, the recent devastation in New Orleans caused by Hurricane Katrina has raised public awareness in California of an issue already known to state water officials: the susceptibility of the Bay-Delta levee system to widespread failure as a result of natural events, such as a major earthquake, severe storm, and rising ocean-water levels, or a combination of these. The maze-like arrangement of channels, levees, and islands function as a sort of natural plumbing system to convey water through the Delta to supply ecosystems, farms, and cities. Strengthening the levees and protecting the water supply have become policy and funding priorities for Governor Schwarzenegger and key legislators.

Assembly Bill 1200 (Laird) directly addresses the current risks and directs DWR and the Department of Fish and Game to evaluate and rate options/technologies for preventing the disruption of water supplies from the Delta, and the Governor's $222 billion bond proposal includes substantial funding earmarked for levee repair. Yet, there is no clear answer to the question of how the continuity of drinking water supply will be maintained through the Delta in the event of disaster.

If the state agencies are being tasked by the Legislature to evaluate options for maintaining water supply as mentioned above, it would seem that Mr. Spragg's waterbag technology may merit consideration in that context.

On February 27, 2006, the West Basin Board adopted a resolution encouraging DWR and all appropriate state agencies to investigate the utilization of waterbag technology as a tool to repair levee breaks and for the temporary conveyance of water through the Delta. I have enclosed a copy of the resolution as a formal request to DWR to support and test the waterbag technology to that end.

West Basin thanks you in advance for consideration of this technology. If you have any questions, please contact Rich Nagel at (310) 660-6210.

Sincerely,

William A. Baker
President

WATER REPLENISHMENT DISTRICT OF SOUTHERN CALIFORNIA

MEMORANDUM

ITEM NO. 7

Prepared by: Mario Garcia

Reviewed by:

DATE: **DECEMBER 21, 2005**

TO: **BOARD OF DIRECTORS**

FROM: **ROBB WHITAKER, GENERAL MANAGER**

SUBJECT: **CONSIDERATION OF RESOLUTION NO. - 05-758 A RESOLUTION OF THE WATER REPLENISHMENT DISTRICT OF SOUTHERN CALIFORNIA ENCOURAGING AND SUPPORTING THE UTILIZATION OF WATERBAG TECHNOLOGY TO IMPROVE WATER SUPPLY RELIABILITY**

SUMMARY

Over the past 18 years, Mr. Terry Spragg of Terry G. Spragg and Associates has approached the District soliciting support for his water bag concept. In short, Mr. Spragg has developed an innovative method of transporting water from areas that have plenty of it to regions that do not. The method involves the use of large waterbags that can be connected into waterbag trains using a patented zipper connection system and then towed by a tug from one point to another. The waterbags will float in the sea because fresh water is more buoyant than salt water (*additional information and photos can be found at the website: www.waterbag.com*).

While the District admires the dedication and enthusiasm with which Mr. Spragg has promoted his ideas, the economics of such an endeavor have never been completely verified because the concept is very different from traditional transport and delivery schemes for water. Mr. Spragg has demonstrated the technology on a smaller-scale

Above are photos from news reports during a demonstration in Washington State. The demonstration was conducted using two connected bags each holding about 770,000 gallons (2.4 AF) each.

basis (see pictures), but full-scale feasibility has not been fully tested. From staff's perspective, the water bags may provide a viable option in emergency situations, but at the present time, do not appear to offer an economical advantage for the District's normal operations.

The recent hurricanes that hit the Gulf Coast and devastated the levee system protecting New Orleans have certainly pointed to California's own vulnerabilities in the delta region. The levees protecting land in the California delta are also susceptible to overwhelming damage. Because the integrity of these levees is necessary to transport water from Northern California to the southern part of the state, it is crucial that the system stay intact. Unfortunately, there is no single solution to this problem, and should a devastating event severely damage one or more levees, the state would just enter emergency mode to fix the problem. Meanwhile, the consequences could be dire to Southern California with respect to water.

These above issues have potentially put Mr. Spragg's water bags in a new light. The bags could play a potential role in the comprehensive solution to "fix the delta". Whether that role is in the "bypass" transportation of water from north to south through the Delta or its use in the physical repair of a levee is yet to be determined, but given the District's desire for a continued and uninterrupted supply of water from Northern California, it would be logical to support Mr. Spragg in his efforts to develop this concept.

As requested by Mr. Spragg, a resolution from the WRD Board may strengthen his position in supporting research and development of his concept. Attached is a resolution for board consideration. In summary, the resolution states the District's general approach and support for waterbag technology research and development but does not necessarily commit any funding or major resource draw from the District.

FISCAL IMPACT

None.

STAFF RECOMMENDATION

Adopt Resolution No. 05-758.

RESOLUTION NO. 05-758

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE WATER REPLENISHMENT DISTRICT OF SOUTHERN CALIFORNIA ENCOURAGING AND SUPPORTING THE UTILIZATION OF WATERBAG TECHNOLOGY TO IMPROVE WATER SUPPLY RELIABILITY

WHEREAS, the Water Replenishment District of Southern California (WRD) is responsible for the management of the supply and quality of groundwater within the Central and West Coast Groundwater Basins of southern Los Angeles County; and

WHEREAS, the local groundwater supply within the WRD service area is vital to the local economy and constitutes approximately 40% of the total water demand of the region; and

WHEREAS, WRD is responsible for providing adequate, reliable, and safe groundwater to meet the current and future demands within its service area; and

WHEREAS, the population and corresponding demand for water in Southern California are expected to increase by 50 percent over the next 20 years; and

WHEREAS, WRD relies on water imported from Northern California via the Sacramento-San Joaquin Delta (Delta) to replenish the groundwater supplies within WRD's service area; and

WHEREAS, a major earthquake in the Delta could cause catastrophic levee failure resulting in a major disruption of water deliveries to Southern California water agencies; and

WHEREAS, Southern California is increasingly having to look toward alternative water supplies and technologies; and

WHEREAS, waterbag technology has been proposed as a temporary levee repair tool and also as a temporary water conveyance tool to transport water through the Delta during a massive levee collapse; and

WHEREAS, a successful demonstration of waterbag technology will have a significant impact on water transport possibilities.

NOW, THEREFORE, BE IT RESOLVED AND DECLARED BY THE BOARD OF DIRECTORS OF THE WATER REPLENISHMENT DISTRICT OF SOUTHERN CALIFORNIA AS FOLLOWS:

1. WRD shall support full-scale waterbag technology consistent with its mission to develop economical and environmentally sound projects to sustain a reliable supply of groundwater for the Central and West Coast Basins.

2. WRD may partner with public and private entities for the development of waterbag technology for the benefit of WRD's service area.

3. WRD may pursue activities to develop waterbag technology when it proves beneficial to WRD's operational objectives.

4. WRD will promote waterbag technology research and innovation through partnerships that competitively fund projects that provide benefits to the development of waterbag technology for California.

5. WRD will request Metropolitan Water District (MWD) to allow waterbag technology used in a project that introduces a new source of water to qualify for a $250-per-acre-foot subsidy.

6. WRD will prepare and transmit a copy of this resolution to the California Department of Water Resources and all other appropriate state agencies in order to gain support for a demonstration and/or a pilot program to assess waterbag technology for California.

AYES:

NOES:

ABSTAIN:

DATED this _____day of _____, 20__

_____
President

ATTEST:

_____
Secretary